GARDEN AND FOREST.

PUBLISHED WEEKLY BY

THE GARDEN AND FOREST PUBLISHING CO.

OFFICE: TRIBUNE BUILDING, NEW YORK.

Conducted by . . . . . Professor C. S. SARGENT.

ENTERED AS SECOND-CLASS MATTER AT THE POST OFFICE AT NEW YORK, N. Y.

NEW YORK, WEDNESDAY, JANUARY 18, 1893.

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The Names of Garden Flowers.

A RECENT article in these columns called attention to the lack of imagination displayed by florists in the names they give to the beautiful blossoms of the Chrysanthemum, which, in the land whence they come, bear such delicate and appropriate appellations that the title is almost as charming as the flower. The same contributor has been consulting the index to our last volume and its list of the names with which these unhappy blossoms are weighted, and the examination shows that out of a hundred and forty flowers, ninety bear the surnames of men or women, with a Christian name or an initial attached, such as Mrs. H. J. Smith, Mrs. R. A. Jones, Mrs. Governor Robinson, and the like, the ladies being largely complimented in this manner; and when J. John Rafferty, Jacob Beemer and a score more of that sort are added, the catalogue reads like a Sunday-school list.

Then follow various proper names, such as Leila, Ethel, Olga, Irma, Roselyn and Clarence, or meaningless titles like Mars, Exquisite, Faust, Syringa, Gold, Thrumpton and Good Gracious, all of which might with equal propriety be applied to a cow or a kitten. This leaves about twenty, which aspire to be descriptive or to have some fancifulness or grace to recommend them. Of the twenty, a few are fairly happy, such as Avalanche, Rosy Morn, Snowflake, Pink Pearl and Mont Blanc. The others are simply tolerable and commonplace, like Golden Ball, White Cap, Sunflower, Black Beauty and Marvel, which convey no particular idea.

Our contributor finds quite as much to criticise in the names of modern Roses. The old-fashioned Sweet-brier was redolent of fragrance and eloquent of thorn in its very name. The Baltimore Belle and Prairie Rose wreathed about our portals, the Cinnamon Rose scattered its musky petals at our feet, the Damask Rose spoke to us of the far east, the Provence Rose brought with it memories of the troubadours, but nowadays our parterres bristle with Marshals and Generals like a battle-field, or are gay with Dukes and Countesses like a royal ball-room. Even Ferdinand de Lesseps and Charles Darwin are to be had for the picking, and Captain Christy appropriately climbs hand-over-hand upon a trellis. Empress of India is, to be sure, not a bad name for this regal flower, and the titles of the court ladies who lend their proud names to adorn the proud blossom do not seem quite so out of place as Mrs. Jones and Mrs. Smith attached to a Chrysanthemum; but how much better we like Boule de Neige or Perle des Blanches or Perle d'Or, The Bride or Sunset or Gloire de Dijon than even the stateliest of these unmeaning titles, which, after all, flatter the person and not the Rose.

Our correspondent might have uttered the same lamentation over the names of Dahlias, Gladioli, Geraniums and, in fact, all other flowers whose garden forms are rapidly multiplying every year. The case of Orchids is, still more distressing, because, while the names are quite as inappropriate, they have been made ridiculous by giving them barbarous Latin terminations. A glance at the list of Irises proved so staggering that our correspondent wrote: "It is not easy to run a word like Kolpakowskyana trippingly off the tongue, or to airily recommend a Xiphioides or a Scorpioides as an attractive object of contemplation. There is a crawliness about the one and a deadliness about the other that are truly repellant, while so lovely a blossom seems to merit something better at the hands of its baptizer than such a word as Missouriensis or Chamæiris as its only handle." But the nurserymen are not responsible for these names, and they only show that the botanists are quite as prosaic as the commercial plantsmen.

But, after all, while there is something to regret in all this, the practice of the producers of new garden-flowers is not singularly reprehensible. There is occasion for similar complaint wherever many new names are in constant demand. Jay-Eye-See and Maud S. are neither of them ideal names for trotters, and the names of distinguished individuals in all the other families of horse-flesh, from the Percheron to the pony, are generally unpoetical and meaningless. The herd-books of various breeds of blooded stock repeat the same lesson, which is emphasized in the inappropriate names of our towns and counties and the streets of our cities. Our common wild flowers rejoice in picturesque and winning names because the name represents a type, and not one of a thousand individual forms. We praise the skill of the Japanese in their selection of names, and argue that in sky and light and in the phenomena of night and day there are similes enough to set forth fitly the delicate charms of an Iris, the opulent gorgeousness of a Chrysanthemum, or the fragrant fullness of a Rose. But, after all, a thousand or so of such names for Chrysanthemums as "Disheveled Hair in Morning Sleep," or "Border of the Thin Mist," however suitable they may be for the use of the oriental poet, would become absurd to the unimaginative western mind. In these rapidly multiplying garden forms of a popular flower a name is only needed for purposes of identification, so that we can talk about it and know which one of a thousand forms is referred to. It is utterly impossible that each one of these forms should have an accurately, or even poetically, descriptive epithet. The best that we can hope for is that they will not be vulgar or repulsive or utterly commonplace. Nine-tenths of them will never be heard of in a few years, and the names of those flowers that prove worthy to live will become mellowed, if not hallowed, by association. Who objects to Madame Plantier as the name of that grand old Rose to-day? Besides this, the selection of a name of a man or woman may be justified by some fact in the history of a plant, just as the name of Mrs. Alpheus Hardy was appropriately given to the sensational flower of that name, because the lady had befriended the young Japanese who sent the Chrysanthemum to her on his return to his native land.

At all events, before we utterly condemn the general practice we ought to be able to lay down some general

laws which could be followed in choosing names for garden plants. The most conspicuous effort at reform in horticultural nomenclature that we now recall was made by the American Pomological Society. In the first place all coarse and vulgar names for fruits were excluded, and such Strawberries as Big Bob and Legal Tender had to be rechristened. As a matter of catalogue convenience long names were abbreviated, and the Duchess d'Angoulême Pear became simply Angoulême, and the King of Tompkins County Apple became Tompkins King, and many useless repetitions of "Beurre," "Pippin" and the like were discarded. All adjectives which seemed to assert the superiority of a variety in any particular way were ruled out as undignified and unjust, so that the Shaffer Colossal Raspberry became simply the Shaffer, and the Hartford Prolific Grape was henceforth the Hartford. Many changes like these were made in the catalogues of fruits which had been long cultivated, and the law was laid down that for new fruits one word, if possible, should be selected as the name; that this word should be, if practicable, explanatory of some character of the fruit, or of the place of its origin, or the name of its producer. There is not much poetry in these rules, but there is a great deal of hard sense, and it is by no means impossible that equally wise and practical laws might be laid down for the naming of new flowers. There are Chrysanthemum societies in this country and in England where the names of new plants are registered, and it would not be impossible for them to formulate a code of laws to govern the nomenclature of their flowers. The Carnation Society might do the same for that flower, and, after free discussion, any glaring evils in naming flowers would correct themselves under the pressure of public opinion.

We may add that, in many classes of vegetables, there is a tendency toward improvement in nomenclature. Terra Cotta is the name of a Tomato sent out by Thorburn, of this city, which is at once novel and descriptive of its color. Ignotum is the very happy name of another variety, which was adopted by Professor Bailey because its parentage was never discovered. Peter Henderson & Co. last year gave a prize of $250 for the best name of a Tomato which was described as of large size and great substance, and from the competition it derived the taking and appropriate name of Ponderosa. It might be added, too, that the originators of new fruits and flowers have a strong commercial incentive for selecting names which will captivate buyers. Many a plant has been sold by its name, and good judges believe that Rogers' Hybrid Grapes would have made their way in popular favor much sooner if they had been named at once instead of being numbered. The Massasoit, the Lindley, the Agawam and the Salem Grape would naturally be talked about, experimented with and sold long before ordinary buyers thought of testing them as Rogers No. 3, Rogers No. 9, Rogers No. 15 or Rogers No. 52.

The Battle-ground in Prospect Park.

THE scene illustrated on page 31 is interesting historically as part of the field where the battle of Long Island was fought, and it is now one of the most peaceful passages in Prospect Park, Brooklyn. The old fort stood on an eminence among the trees to the right of the picture, and the locality is marked by a large bronze tablet suitably inscribed and set in the face of a rock in full view from the drive passing near it. Many visitors are attracted to the spot by revolutionary associations, and derive, let us hope, patriotic inspiration from them. They certainly can find in the place much to appeal to their sense of beauty as well as to their love of country, and those who are interested in landscape-art will find the whole arrangement worthy of careful study. While no strong contrasts are offered, the ever-changing, peaceful beauty of the scene at all hours of the day has made it a favorite spot with thousands of visitors. One can readily perceive how much better is the gently sloping surface of the lawn, slightly concave in the centre, to what it would have been if made a dead level, with the hillocks rising abruptly from the margin, as we too often see them in park formations. Now there is an ever-varying play of light and shadow that arrests the eye and stimulates the imagination.

This result is largely assisted by the grouping of the trees and large shrubbery. The knoll at the right of the picture is largely planted with evergreens. Nordman's Silver Fir and the lofty Bhotan Pine mingle their contrasting graces, while the darkness of the Oriental Spruce and the plumy Hemlocks are relieved by the silvery white trunks and graceful spray of Weeping Birches. Some Austrian Pines are among them, but they are not at their best on Long Island soil and in its changeable atmosphere. Although these trees have been much thinned since planting, they will soon need the further use of the axe to prevent crowding. The more distant trees are deciduous in character—Walnuts, Beeches, Oaks and Maples—while still beyond those in the picture is a screen of evergreens and shrubbery which shuts Flatbush Avenue entirely from the sight of persons in the park. The view-point is under the shadow of a great American Elm, known to all familiar with the park as the "Nellie Tree," and dedicated to the memory of one who was fond of the spot. This is a favorite place for memorial trees, and many have been planted here in memory of different persons and events. The Centennial Oak, for instance, is near here, planted on the one-hundredth anniversary of the battle, and thriving vigorously. The paths that cross the meadow are so well concealed by the slight variation of its surface that they are unseen, and, therefore, they do not break the continuity of the view or lessen the feeling of breadth and expansiveness which it conveys as the greensward flows among the open groups of trees, losing its outlines in the mystery of their shadows. Altogether it is a most instructive example of what can be accomplished with the simplest elements—grass, shrubs and trees—in producing a perennially charming landscape, and it is an object-lesson to the hundreds who daily walk and drive past it.

Brooklyn, N. Y. *John DeWolf.*

Notes on the Forest Flora of Japan.—I.

IN one of the most interesting papers* which have been written on the distribution of forests, Professor Asa Gray many years ago drew some comparisons between the forests of eastern North America and those of the Japan-Manchurian region of Asia. Here it was shown that, rich as is eastern America in tree species, Japan, with the regions to the north of it, is, in spite of their comparatively small area, even richer. Professor Gray's Asiatic region included the four principal Japanese islands, eastern Manchuria and the adjacent borders of China, while the contrasted American region embraced the territory east of the Mississippi River, but excluded the extreme southern point of Florida, inhabited by some sixty tropical trees which belong to the West Indian rather than to the true North American flora. In the Japan-Manchurian region he found 168 trees divided among sixty-six genera, and in eastern America 155 trees in sixty-six genera, the enumeration in both cases being confined "to timber-trees, or such as attain in the most favorable localities to a size which gives them a clear title to the arboreous rank." In the Japanese enumeration were included, however, a number of species which are not indigenous to Japan, but which, as we now know, were long ago brought into the empire from China and Corea, like most of the plants cultivated by the Japanese. Early European travelers in Japan, like Thunberg and Siebold, who were unable to penetrate into the interior, finding these plants in common cultivation, naturally believed them to be indigenous, and several Chinese plants were first described from individuals cultivated in Japanese gardens. Later writers† on the Japanese flora have

* Forest Geography and Archæology, *Scientific Papers*, ii., 204.

† See Franchet & Savatier, *Enum. Pl. Jap.*: Forbes & Hemsley, *Jour. Linn. Soc.* xxiii. and seq.

generally followed the example of these early travelers and included these plants in the flora of Japan. Indeed, it is only very recently that it has been possible to travel freely in all parts of the empire and to study satisfactorily the character and distribution of its flora.

The list of Chinese and Corean trees cultivated in Japan, and usually enumerated in Floras of the empires, includes Magnolia conspicua, M. parvifolia, M. Watsoni, Sterculia platinifolia, Cedrela Chinensis, Zizyphus vulgaris, Kœlreuteria paniculata, Sapindus Mukirosi, Acer trifidum, Rhus vernicifera, Sophora Japonica,* Prunus Mume, Pyrus Sinensis, Cratægus cuneata, Eriobotrya Japonica, Liquidambar Formosana (Maximowiczii), Cornus officinalis, Diospyros Kaki, and probably D. Lotus, Chionanthus retusa, Paulownia imperialis, Catalpa Kæmpferi, Lindera strychnifolia, Ulmus parvifolia, Thuja orientalis, Ginkgo biloba, Podocarpus Nageia, P. macrophylla and Pinus Koraiensis. If these species,† twenty-nine in number, are deducted from Professor Gray's enumeration, there will remain 139 species in fifty-three genera, or a smaller number of both genera and species than he credited to eastern America. This, however, does not alter the fact that the Japanese region for its area is unsurpassed in the number of trees which inhabit its forests.

Indeed, the superiority of the forests of Japan in the number of their species over those of every other temperate region, eastern North America included, in proportion to their area, has certainly never been fully stated as, perhaps, I shall be able to show, having lately returned from a somewhat extended journey through the northern and central islands, undertaken for the purpose of studying Japanese trees, in their relations to those of North America. The case, perhaps, can best be stated by following Professor Gray's method and making a new census of the inhabitants of the Japan-Manchurian forests and of those of eastern America, as these two regions extend through nearly the same degrees of latitude and possess somewhat similar climates, although Japan has the advantage of a more equally distributed rainfall and a more equable climate, and offers a far more broken surface than eastern America, with mountains twice the height of any of the Appalachian peaks.

As the true Atlantic forest extends west to the eastern rim of the midcontinental plateau, the American region, for purposes of proper comparison, may be extended to the western limit of the Atlantic tree-growth, although this will add to the American side of the account a few genera and species of Texas, like Kœberlinia, Ungnardia, Parkinsonia, Prosopis, Acacia, Chilopsis, and Pithecolobium, which Professor Gray certainly did not include in the enumeration from which his deductions were made. The south Florida species are again omitted, and, as in *The Silva of North America*, those plants are considered trees which grow up with a single stem. In eastern North America, that is in the whole region north of Mexico and east of the treeless plateau of the centre of the continent, but exclusive of south Florida, 223 species of trees, divided among 133 genera, are now known. The Japan-Manchurian region includes eastern Manchuria, the Kurile Islands, Saghalin, and the four great Japanese islands, but for our purpose does not include the Loochoo group, which, although it forms a part of the Japanese empire politically, is tropical and subtropical in the character of its vegetation, which, moreover, is still imperfectly understood. In this narrow eastern border of Asia there are now known 241 arborescent species divided among ninety-nine genera. The extra Japanese portion of the region contributes but little to the enumeration. In Saghalin, Fr. Schmidt* found only three trees which do not inhabit Yezo, and in Manchuria, according to Maximowicz† and Schmidt,‡ there are only eighteen trees which do not also occur in Saghalien or in the northern Japanese islands. In the four islands of Yezo, Hondo, Shikoku and Kyushu, therefore, we now find 220 arborescent species divided among ninety-nine genera, or only three less than occur in the immense territory which extends from Labrador to the Rio Grande and from the shores of the Atlantic to the eastern base of the Rocky Mountains. Neither Cycas revoluta nor Trachycarpus (Chamærops) excelsa is included in the Japanese list, as the best observers appear to agree in thinking that these two familiar plants are not indigenous to Japan proper. I have omitted, moreover, a few doubtful species from the Japan enumeration, like Fagus Japonica, Maxm., and Abies umbellata, Mayr, of which I could learn nothing in Japan, so that it is more probable that the number of Japanese trees will be increased than that any addition will be made to the silva of eastern America.

The proportion of trees to the whole flora of Japan is remarkable, being about 1 to 10.14, the number of indigenous flowering plants and vascicular cryptogams being not very far from 2,500 species. Still more remarkable is the large proportion of woody plants to the whole flora. In Japan proper there are certainly not less than 325 species of shrubs, or 550 woody plants in all, or one woody plant in every 4.55 of the whole flora—a much larger percentage than occurs in any part of North America.

The segregation of arborescent species in Japan is, however, the most striking feature in the silva of that country. This is most noticeable in Yezo, where probably more species of trees are growing naturally in a small area than in any other one place outside the tropics. Near Sapparo, the capital of the island, in ascending a hill which rises only 500 feet above the level of the ocean, I noticed the following trees: Magnolia hypoleuca, M. Kobus, Cercidiphyllum Japonicum, Tilia cordata, T. Miqueliana, Phellodendron Amurense, Picrasma ailanthoides, Evonymus Europæus, var. Hamiltonianus, Acer pictum, A. Japonicum, A. palmatum, Rhus semi-alata, R. tricocarpa, Maackia Amurensis, Prunus Pseudo-Cerasus, P. Ssiori, P. aucuparia, Pyrus Toringo, P. alnifolia, Hydrangea paniculata, Aralia spinosa, var. canescens, Acanthopanax ricinifolia, A. sciadophylloides, Cornus macrophylla, Syringa Japonica, Fraxinus Mandshurica, F. longicuspis, Clerodendron trichotomum, Ulmus campestris, U. montana, var. laciniata, Morus alba, Juglans Sieboldiana, Betula alba, B. alba, var. Tauschii, B. alba, var. verrucosa, B. Ermanni, B. Maximowicziana, Alnus incana, Carpinus cordata, Ostrya Japonica, Quercus crispula, Q. grosseserrata, Castanea vulgaris, Populus tremula, Picea Ajanensis, Abies Sachaliensis—forty-six species and varieties. Within five miles of this hill also grow Acer spicatum, var. Kurunduense, A. Tartaricum, var. Ginnala, Styrax Obassia, Aphananthe aspera, Quercus dentata, Q. glandulifera, Alnus Japonica, Salix subfragilis, S. Caprea, S. stipularis, S. acutifolia, S. viminalis and Populus suaveolans—in all sixty-two species and varieties, or more than a quarter of all the trees of the empire crowded into an area only a few miles square, in the latitude of northern New England in the whole of which north of Cape Cod there are only about the same number of trees.

A further examination of the trees of the two countries shows that, although the Japan-Manchurian region possesses more arborescent species than eastern America, the silva of the latter is much richer in genera—132, to ninety-nine in Japan-Manchuria. Forty-four genera have arborescent species in the two regions; forty-five genera with Japanese representatives have none in the flora of eastern America, and thirty-seven genera represented in the American flora do not appear in that of Japan. A few genera,

* Even Rein (*The Industries of Japan*), usually a most careful observer, states that Sophora Japonica is "scattered through the entire country, especially in the foliaceous forests of the north." He had evidently confounded Sophora with Maackia, a common and widely spread tree, especially in Yezo. Sophora, which is only seen occasionally in gardens, does not appear to be a particularly popular plant with the Japanese.

† A number of shrubs, familiar in western gardens, and usually supposed to be Japanese, from the fact that they were first known in Japan or first sent from that country, are also Chinese or Corean, and in Japan are only found in gardens or in the neighborhood of habitations. Among them are Clematis patens, Magnolia stellata, M. obovata, Berberis Japonica, Citrus Japonica, Prunus tomentosa, P. Japonica, Spiræa Thunbergii, Rhodotypos kerrioides, Cercis Chinensis or Japonica, Enkianthus Japonicus, Forsythia suspensa, Olea fragrans, Tecoma grandiflora, Daphne Genkwa, Edgworthia papyrifera, Wikstrœmia Japonica. Nandina domestica, the most universally cultivated ornamental plant in Japan, is probably not a Japanese plant, although Rein states that it grows wild in Shikoku.

* *Reisen in Amurland.* † *Prim. Fl. Amur.* ‡ L. C.

five in eastern America and seven in Japan, are represented by trees in one region and by shrubs only in the other. Of endemic arborescent genera the silva of eastern America contains Asimina, Kœberlinia, Cliftonia, Ungnardia, Robinia, Cladrastis, Pinckneya, Oxydendrum, Halesia, Sassafras, Planera, Hicoria and Taxodium, thirteen, while in Japan there are only six—Euptelia, Cercidiphyllum, Trocodendron, Platycarya, Cryptomeria and Sciadopitys.

Such a comparison between the silvas of eastern America and Japan is interesting as showing the great number of arborescent species inhabiting four small islands. The significant comparison, however, if it can ever be made, will be between eastern America, as here limited, and all of eastern Asia from the northern limits of tree-growth to the tropics, and from the eastern rim of the Thibetan plateau to the eastern coast of Japan. This would include Corea, practically an unexplored country botanically, especially the northern portions, and all the mountain-ranges of western China, a region, if it is to be judged from the collections made there in recent years, far richer in trees than Japan itself. It is impossible to discuss with precision or with much satisfaction the distribution of ligneous plants of the north temperate zone until more is known of western China and of Corea, where may be sought the home of many plants now spread through eastern China and Japan, and where alone the enterprising and industrious collector may now hope to be rewarded with new forms of ligneous vegetation. *C. S. S.*

New or Little-known Plants.

Salix balsamifera.

AMONG the shrubby Willows of eastern America there is, perhaps, not one more desirable as a garden-plant than this species, of which a figure from a drawing made by Mr. Faxon in the Arnold Arboretum, is published on page 29 of this issue.

Salix balsamifera is a stout much-branched shrub, growing, under favorable conditions, to the height of eight or ten feet, forming clumps of some size, and conspicuous from the lustrous young shoots which on the side exposed to the sun are bright chestnut-brown. The leaves are lanceolate to ovate-lanceolate, two to four inches in length, acute or acuminate, broadly rounded and usually somewhat cordate at the base, slightly glandular-serrate, and long-stalked; when they appear they are thin, nearly transparent, and bright red, but later become thick and rigid, dark green on the upper, and pale and prominently reticulate-veined on the lower surface. The stipules are minute or abortive. The flower-clusters are borne on slender leafy stalks. The male flowers are thickly clothed with pale silky hairs, and are conspicuous from the rose-colored scales and from the anthers, which are at first red, but later become bright yellow. The female aments, which are from two to two and a half inches in length, are less silky, and become lax in fruit.

Salix balsamifera inhabits open swamps; it is scattered along the northern borders of the United States from Maine to Minnesota, and extends north into British America.

The history of this plant, as told by Mr. M. S. Bebb in the *Bulletin of the Torrey Botanical Club* (xv., 122), is interesting. In the spring of 1879, in looking over the collection of Willows in the Herbarium of the Philadelphia Academy of Natural Science, he discovered a few leaves which had been collected in the White Mountains more than half a century before. The label read: "Salix ——? Bank of Ammonoosuc, White Hills, N. H., H. Little, August, 1823." This fragmentary specimen he recognized as Salix balsamifera, and realized that it was the earliest collection of the species, as the specimens of the English collectors, Drummond and Richardson, made in British America, upon which the species was founded, were made later, as were the specimens from which Andersson, the Swedish botanist, described his Salix pyrifolia, which is only another name for Salix balsamifera.

Mr. Bebb communicated his discovery to Mr. Pringle, who was at that time particularly interested in the flora of the White Mountains. In company with C. E. Faxon, Pringle scoured the banks of the Ammonoosuc for Little's Willow, but without success. After having given up the hunt and returned to the Crawford House, they accidentally stumbled on the missing plant growing on the banks of the Saco River, not five minutes' walk from the hotel, where for the last fifty years it had remained unnoticed. A fortnight later, Mr. Edwin Faxon "succeeded in finding another clump of females on the south branch of the Ammonoosuc, about three-quarters of a mile from Mr. Pringle's habitat, and a very fine clump of males on the east branch of the same stream, about four miles further north, very near the railroad to the Fabyan House, at the base of Mount Washington." In subsequent years Mr. Edwin Faxon detected this plant in a number of localities in the White Mountains, especially in the neighborhood of Franconia, where "it is common in and around the large swamps."

In 1880, Salix balsamifera was introduced into the Arnold Arboretum, where it is perfectly established, the two sexes flowering freely every year, and where it is one of the most beautiful and distinct of the shrubby Willows in the collection. *C. S. S.*

Foreign Correspondence.

London Letter.

Urceocharis Clibrani and Bigeneric Hybrids.—The production of a genuine hybrid from two plants recognized as members of distinct genera is an occurrence of some interest, both to botanists and cultivators. The last case of this kind is that of Urceocharis Clibrani, the history of which is as follows: In July last, Messrs. Clibran & Son, of Altrincham, Cheshire, exhibited, under the name of Eucharis Clibrani, flowers which they said were from a plant raised by them from Eucharis grandiflora and Urceolina aurea. The flowers attracted little notice at the time, but a few weeks later, Dr. Masters published in the *Gardeners' Chronicle* a figure and description of Messrs. Clibrans' plant, which he had renamed as above, the generic name being a compo[illegible]f that of the two parents. A few days ago Messrs. Clibr[illegible]t flowers of the plant to Kew for examination, and M[illegible]aker is satisfied that it is a hybrid from the two parents named. The general habit of the plant appears to be like that of the Eucharis, the leaves being as large, the scape stout and eighteen inches long, bearing an umbel of eight flowers. In the flowers, however, we get some evidences of the Urceolina, the lower part of the tube being slender, the upper urceolate or campanulate, and the segments recurved at the tip. As a garden-plant this hybrid is likely to prove useful, the flowers being pure white, graceful, three inches long and two inches across the mouth. The buds are white, with green tips. The plants appear to bloom freely and frequently, Messrs. Clibran having had them in flower in July, August, and again in December.

The question arises, Are we to accept the Urceocharis as a genuine bigeneric hybrid, or to look upon it as conclusive evidence that the parents belong to one genus? Dean Herbert held the view that bigeneric hybrids were impossible, the occurrence of so-called hybrids being presumptive evidence that botanists had been mistaken with regard to the genera concerned.

The only other recorded case in Amaryllidaceæ is that of Cyrtanthus hybridus, which was bred in the garden of Sir Trevor Lawrence, from Cyrtanthus sanguineus and Vallota purpurea. Mr. N. E. Brown, of Kew, who described and named this plant in 1885, and whose knowledge of Cape plants is probably unsurpassed, said of it, "I think this plant can scarcely be claimed as an example of a hybrid between two distinct genera, but rather as proving a view that I have held for some time, namely, that Cyrtanthus and Vallota are not really distinct genera, but merely

different types of form belonging to the same genus, just as one finds in many other genera, as, for example, in Rhododendron, Lilium, Erica, Gentiana, Pelargonium, etc."

Viewing the Urceocharis from this standpoint, we are, I think, forced to the conclusion that Urceolina and Eucharis belong to one and the same genus. The diagnosis of the two as set forth by botanists, including Mr. Baker, shows that there is very little difference between them; far less than we find between, say, some of the species of Cyrtanthus, Narcissus or Hippeastrum. Urceolina itself, as now constituted, is made up of three species, one of which is almost everywhere known as Pentlandia miniata.

The "bigeneric" hybrids already recorded are very few, most of them being Orchids. Mr. Rolfe has dealt with the Orchids in a paper which he read before the Linnæan Society in 1887, afterward published in the society's journal. He follows Dr. Masters in designating these hybrids by compounding for them the names of the two parents, such as Phaio-calanthe, Lælio-cattleya, Sophro-cattleya, Zygocolax, etc. No one acquainted with Lælias and Cattleyas would object to their being united to form one genus, and Sophronitis might, with equal reason, be included with them, these three genera being, confessedly, very closely allied. Calanthe Veitchii was a supposed bigeneric hybrid until Bentham showed that Calanthe vestita and Limatodes rosea, its parents, not only belonged to the same genus, but were closely allied species. Phajus and Calanthe are very near allies, if we compare such species as Phajus veratrifolius with Calanthe masuca, etc., the botanists' opinion, notwithstanding.

Philageria Veitchii, the offspring of Philesia and Lapageria, only proves what might easily have been admitted

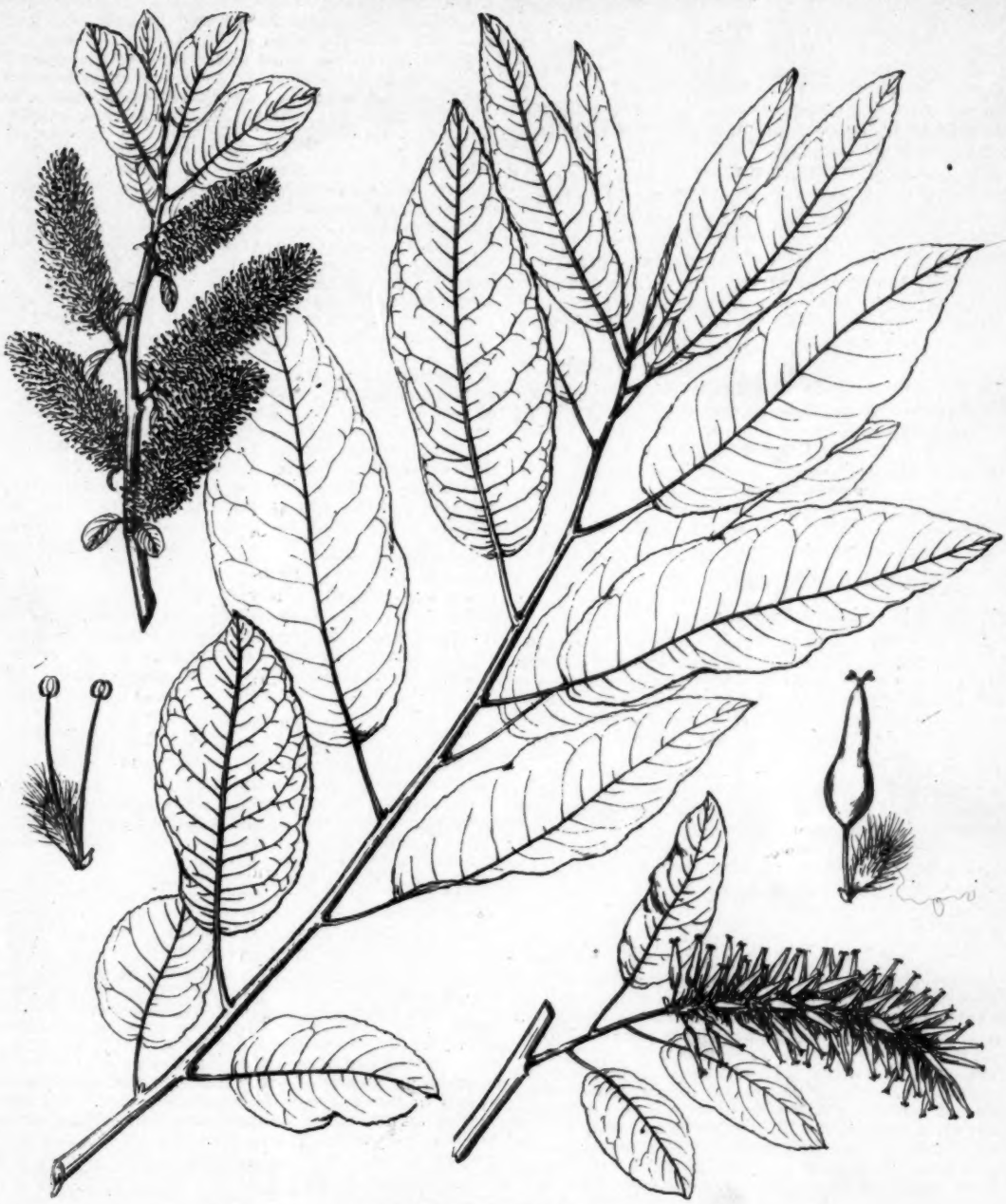

Fig. 5.—Salix balsamifera.—See page 28.

without such proof—namely, that the two plants belong really to one genus.

The whole system of classification is admittedly arbitrary, and the division of plants into genera is necessarily often only a temporary arrangement, to be reconsidered when more is known. In England we keep the genera Aloe, Gasteria and Haworthia distinct, but many Continental botanists unite them under Aloe. We have a plant at Kew, Aloe Lynchii, which is the product of a Gasteria crossed with an Aloe. In England this is a bigeneric hybrid, elsewhere it is not. As a rule, however, the boot is on the other leg, Continental schools being the "splitters," English the "lumpers."

I know of seedlings which are the result of crossing Amaryllis Belladonna with Vallota purpurea. Should these prove genuine hybrids, we must, to be consistent, unite the Belladonna Lily with the Vallota, and these again with Cyrtanthus. To those who believe in bigeneric hybrids, this is a "rather large order," and yet any one who knows the genus Cyrtanthus must agree that it comprises plants that are remarkably like both the Vallota and Amaryllis. It would simplify matters if botanists would look upon the intercrossing of two plants as conclusive proof of their generic relationship. Of course, the converse of the above argument does not hold good—namely, that plants which refuse to intercross are therefore, *ipso facto*, generically distinct. We have tried again and again to cross certain plants of undoubtedly the same genus, such as Begonia, Crinum, Nymphæa, Rhododendron, etc., but have never succeeded. Failure in such cases is, no doubt, due to some slight difference, constitutional or other, and certainly not to any such structural differences as those upon which all good genera are based.

London. *W. Watson.*

Cultural Department.

Late-keeping Pears.

IN the matter of keeping, pears have their own ways, not only as to the length of time they may be kept after gathering without decay, but also as to the time of gathering them with a view to keeping. I know of no apple that is not better ripened on the tree. With pears the rule is almost, if not quite absolutely, the reverse, although there are a number of summer and fall pears that do not rot at the core before their maturity for eating. Persons not informed of the peculiarities of pears in this particular are apt at once to condemn a sort which does not ripen well on the tree, retaining its soundness and flavor. I remember quite well when Clapp's Favorite was first brought prominently into notice, and a great many trees were sold about Boston at high prices; also the uproar there was among the purchasers when it was found that the fruit rotted on the trees before becoming eatable. The same thing has happened here in northern Vermont in regard to the ironclad Russian Pear, Bessemianka. As to the latter, I do not know that this trouble can be headed off; but as Clapp's Favorite, in fine order, has been for quite a number of years abundant in the fruit-stores of Boston and elsewhere, I suppose that most growers have found out how to handle it.

There is a standing rule that as soon as a pear will part readily from the tree, when lifted to a right angle with its natural position, or a little farther, it should be gathered; and, if it is not then eatable, it should be ripened in the house. But there are not a few pears which will wither and become useless, without ripening, if this rule is followed as most would follow it, by putting the fruit in a drawer, basket or box, in a room of varying temperature. The fruit must be kept cool, dark and protected from currents of air, to mature it acceptably.

I speak of this class of pears first—what may be called the autumn pears—because they are the class which usually gives inexperienced growers the most trouble. Yet there are a good number of autumn pears which may be handled much like apples, and these are the common favorites. In going over the whole list of our foreign and native pears, running in number far into the hundreds, there is great difficulty of selection. Marshall P. Wilder, the greatest of our pear experts, is quoted as saying that if he were asked to name all the sorts which he considered of unvarying and unquestionable excellence in all respects, he could not count more than twenty. But, of course, Mr. Wilder was limited by the conditions of his environment. Twenty may be enough for any single locality, but the list would hardly be identical in any two localities fifty miles apart.

Mr. Downing, in his big book and its supplements, gave us a list of 213 winter pears, including all the varieties marked as November and December varieties, of which there are thirty-eight. From this long list he places in his select list for table, market and cooking, Clairgeau, Diel, Gris d'Hiver Nouveau, Dana's Hovey, Josephine de Malines, Lawrence, Leon Le Clerc, Lycurgus, McLaughlin, Pound, Prince's St. Germain, Spanish Bon Cretien, Vicar of Winkfield, Winter Bon Cretien and Winter Nelis.

John J. Thomas, in his *American Fruit Culturist*, speaks of Clairgeau as often very good and rich, but frequently poor. Of Lawrence he says that it ripens easily, and is of uniform excellence, while Lycurgus is rich, a little coarse, but very high-flavored. McLaughlin, he says, is juicy, melting, sweet, rich and perfumed. Of Diel, the flesh is rather coarse, but rich, sugary, buttery and juicy. Gris d'Hiver is buttery, melting, very juicy, rich, sub-acid; Dana's Hovey is rather small—flesh buttery, melting, and of excellent quality. Josephine de Malines is characterized as sweet, melting, buttery, and of good flavor; Lawrence, an early good bearer, medium size, buttery, with a rich aromatic flavor; Leon le Clerc, rather large, flesh crisp, firm, moderate quality; Lycurgus, small, russet, rich, very high-flavored; Pound Pear, very large, a good culinary pear; Prince's St. Germain, juicy, melting, fine flavor. Spanish Bon Cretien is a large yellow and red cooking pear. The Flemish pear of the same name is of medium size; also a cooking pear, which stews nicely, and is of good flavor. The Winter Nelis is of medium size, but of very choice quality. It keeps until midwinter, being in good condition for eating for a month or more. Downing says that it holds the same position among winter pears that the Seckel does among the autumnal varieties.

Of course, there is a very wide range of choice among the remainder of this long list of pears maturing through the winter. It would be difficult to obtain most of the kinds as trees ready for planting, even from our most extensive nurseries, though the older and larger concerns can supply from their orchards cions of many more sorts than those I have named. Every variety has its favorite locality, where it seems to be at home, and to thrive in the greatest perfection. Even in such places, however, none of them will show its full value, except under the most careful cultivation and training. Pears will not, as a rule, "rough it" as well as apples. They need a deep, rich, strong soil. Nevertheless, they can be grown successfully, at least many varieties can be, on lighter soils, if they are otherwise well cared for. Vast quantities of very fine pears are grown all through eastern Massachusetts. Indeed, they have seemed to thrive there better than in the Connecticut and Hudson valleys. But I take it that the true reason for this is to be found in the fact that the growers of pears about Boston know that it is useless to trust their Pear-trees to luck. I have been much surprised, for instance, to see many very fine Pears growing in the Merrimack valley about Lowell, and from thence both up and down the river, and this in soils where one would think, in the common way of speaking, that White Beans would not grow, though my experience is that no crop requires a better treatment to make it pay than those same White Beans. I make these remarks to encourage those who may hesitate to plant Pears, and particularly the winter Pears, in what may be thought to be unfavorable localities. Planting for market is one thing, planting for home use is quite another. Mr. Wilder lavished very large sums in fitting the soil of his Pear-orchards for the trees. But to keep the ground about three or four, or half a dozen, trees in prime condition is within the means of every householder, since the ordinary wastes of the domestic menage will suffice. It is best, however, to inquire of the older denizens what varieties they have had the best success in growing.

Newport, Vt. *T. H. Hoskins.*

Work of the Season.

ONE necessary portion of the work of the season, under glass, is the propagation of stock for outdoor planting, and also for the cut-flower supply of the following winter. Among the plants of the latter class requiring attention now are Carnations, of which a good supply is indispensable, for these beautiful flowers are deservedly universal favorites. The propagation of Carnations does not present any particular difficulties, providing a few general points are observed, the chief of which is to have good clean sand, well packed down before the cuttings are inserted therein. The selection of stocky side-shoots for cuttings, and a temperature of about

sixty degrees, with slight bottom-heat, are also points to observe. The cuttings should be made from sturdy shoots, such as those generally found on blooming stems, for they are much superior to bottom shoots, because the latter usually run up to a flower very soon after they are rooted.

Carnation-cuttings should never be cut from the parent plant, but always broken, and the cuttings above mentioned seldom need any trimming, even at the bottom, though it is best to trim the leaves somewhat with a sharp knife, for the removal of part of the foliage leaves less strain on the vitality of the cutting, and makes it more convenient for planting. They should then be inserted in the sand at once. The common method for planting small cuttings, by scoring a line in the sand with an old knife, makes a drill deep enough to hold the cuttings securely after they are watered in. Some shading will be needed to protect the cuttings from the full strength of the sunshine, and newspapers laid on laths placed across the bench answer very well for this purpose. If proper attention is given to the necessary supply of moisture the cuttings will be rooted in from two to three weeks. When rooted they should either be potted off into small pots or planted in shallow boxes. Growers who prefer the latter plan argue that the plants so treated do not get root-bound and stunted, as is sometimes the case with pot-grown stock. On the other hand, it is claimed by some that the plants grown in boxes are likely to suffer from disturbance of their roots at planting-out time. It will readily be seen that the latter objection will not hold good if the separation be carefully made, and the plants treated in this manner can be conveniently moved from house to frame as soon as they are sufficiently established. This cool treatment of the young stock before planting out induces a sturdy growth.

It is not a safe rule to recommend any varieties of Carnations as being reliable in all localities, for differences in soil, doubtless, make some difference in the behavior of certain varieties, and it is, therefore, necessary to find out by actual test what sorts are most suitable for a given locality, but the following are all good, and among them some satisfactory ones in each division. Among the many white varieties the following are particularly good: Mrs. Fisher, Hinzie's White, Lamborn, Silver Spray and Lizzie McGowan. In pink shades, Edna Craig, Daybreak, Grace Wilder and Grace Battles may be considered among the best, the first of the quartet not being as yet in general cultivation, though it shows marked good qualities in the vicinity of Philadelphia. In the extended list of red and crimson shades, Portia, Alegatiere, Lady Emma, Ferdinand Mangold and King of the Crimsons are leading favorites, though the last-named is rather late-flowering. Among the yellow and striped flowers, Buttercup, Golden Gate, Chester Pride, American Flag and Mrs. Carnegie are considered best.

A generally satisfactory yellow Carnation would be hailed with much enthusiasm by most growers. This is apparently the most difficult want to supply among the Carnation experts, and while the two yellows noted above may not prove entirely satisfactory, yet they are probably the best of that color.

Holmesburg, Pa. *W. H. Taplin.*

Fig. 6.—Scene near Battle Pass, Prospect Park, Brooklyn, New York.—See page 26.

Irises and Their Cultivation.—V.

THE Japanese Irises of our gardens are varieties of I. lævigata (I. Kæmpferi), a species which is native of eastern Siberia and Japan. In the latter country it seems to be one of the most popular of garden-plants, for it is not only in extensive cultivation, but it is also one of the flowers very frequently appearing on those flamboyant screens, etc., in which the Japanese artisans delight. These Irises seem to have been cultivated in gardens here only since the opening of the treaty ports of Japan. Probably the first were introduced by the late Thomas Hogg, about the year 1869, and were grown in James Hogg's garden, and by Dr. George Thurber, who described them in the *American Agriculturist* in 1870. It is interesting to know

that the varieties then introduced are still all grown at Woolson's nursery, where they have been the parents of a large number of fine varieties. The Japanese Irises are admirable garden-plants, perfectly hardy, making numerous short creeping rhizomes and are readily propagated by these or by seed, which germinates rapidly and produces flowering plants the second year. The leaves are abundant, thin, finely ribbed, sword-shaped, and light green in color. The stems overtop the leaves and bear usually a single cluster of two or three flowers. The standards are very short, the falls wide and usually arranged laterally, flat or slightly waving, and in color white marked with yellow and in all shades of purple, from claret to a light violet. Some of these are self-colored, some have parti-colored markings, and an interesting group has dark reticulations on light grounds. Good forms of the flower spread about six inches, but by cultivation they are often to be had half as large again. There are double forms of this Iris, usually with six falls, and this doubling does not detract from its grace. The peculiar grace of the plants in flower seems to me to be their special charm. Their color-effec is rather sombre, but the flowers seem lightly poised on their tall stems, and the effect is in striking contrast with that of the more formal German Irises, with their tall standards and drooping falls. They also succeed the latter in their flowering season, and with proper selection of varieties one should have quite a month of Japanese Irises. They are cultivated as subaquatics to get the best results as to size of flower, but they do well in a moderately moist border, or elevated slightly on the margins of water, where their roots easily find abundant moisture. Otherwise, the proper way to cultivate this Iris is in groups of moderate size. In masses, as seen in nursery rows, or in the large collections of which one sees occasional pictures, they seem to lose that airy grace which is so characteristic.

The American Irises should have a separate chapter, as they are among our handsomest native flowers. Mr. Sereno Watson, in Garden and Forest (vol. i., p. 18), in an interesting note called attention to the fact that "they have received little attention from horticulturists, and most of them are imperfectly known to professed botanists." It is difficult to discover what plants are being cultivated in gardens, and there may be complete collections of American Irises in cultivation, but a number of them seem difficult to obtain except through collectors, and there are those which appear to be difficult to retain in cultivation after they have been collected. Mr. Watson enumerates eighteen species in the article referred to, and there has since been added Iris Caroliniana, discovered by Mr. W. A. Manda near Wilmington, North Carolina, in 1888. It may prove useful to repeat this list. The eastern and arctic species are: I. lacustris, I. cristata (I. odorata, Pers.), I. verna, I. tripetala (I. tridentata, Pursh), I. Hookeri and I. setosa (the latter also being found in Siberia), I. prismatica (I. Virginica, Gray, I. gracilis, Bigelow, I. Boltoniana, R. & S.), I. hexagona, I. cuprea (I. fulva, Ker.), I. versicolor.

Iris Missouriensis (I. Tolmieana, Herbert) is the only species of the interior plateau ranging from the Rocky Mountains to the Sierra.

The species of the far west and Pacific coast are: I. tenax, I. tennis, I. Macrosiphon, I. Douglasiana, I. bracteata, I. Hartwegi and I. longipetala.

Iris lacustris is a very dwarf species, resembling I. cristata, found on the shores of the Great Lakes in moist gravel, and submits readily to cultivation; color, lilac, with a yellow crest. I. cristata is second to no dwarf Iris in beauty. It is perfectly hardy in this latitude. The light lilac flowers, beautifully crested, are freely produced and are fragrant. The thin root-stalks creep at or near the surface in all directions, and when flowering the low foliage is fairly hidden by the abundant flowers. I. verna is another fragrant dwarf with darker flowers and grass-like foliage; a fine variety for border or rockery. I. tripetala is a distinct and interesting Iris botanically. It proves to be attractive in the garden, growing strongly in an ordinary border, with purple flowers. As it is from Florida, I have, as yet, lifted it in winter, and cannot report as to its hardiness. Transplanted in the border it flowered this year in July. I. prismatica, the narrow-leaved, and I. versicolor, the broad-leaved, Irises are so abundant in the eastern states as to be familiar to every one, and are both worthy of cultivation in the garden, where they are not at all fastidious, and seem to do equally well in a dry border or as sub-aquatics.

Iris Caroliniana is a species near to I. versicolor, but is very distinct horticulturally. It proves to be an attractive Iris with rather pale green (not glaucous) lax leaves, about two feet high. The stems and spathes are dark brown and the flowers are lilac. It is very vigorous and free-flowering.

Iris hexagona is the tall crested species of the southern Atlantic coast. I. cuprea has been long in cultivation, and is one of the most distinct of the family, with its coppery brown flowers, which are expanded laterally, and are quaint and attractive. While a native of swamps of the interior, it grows well with me in the driest border. I. Missouriensis has the distinction of being the only member of the family in the vast territory between the Rockies and the Sierra Nevada. It is rather attractive, with pale purple reticulated falls.

Native plants of the California coast are not, as a rule, very satisfactory ones for careless cultivation on this coast, and the Irises, or, at least, some of them, are, apparently, not exceptions to this. I tenax, however, lives and flowers freely here with no special care. I. tennis was figured in Garden and Forest (vol. i., p. 7) and I. bracteata in vol. i., p. 43, and it will be found that these, with I. Hartwegii, which also has thin, wiry, creeping root-stalks, are rather difficult subjects in the garden here. I. Hartwegii is found in the high ranges of the Sierras under Pinus ponderosa growing in red volcanic clay. I have found among my friends no one who has succeeded in growing it successfully for more than a year or two at best. There is an experimental clump in one corner of my garden, but it is not a corner where many hopes are centred. I. Douglasiana is of more robust habit, with flowers white-veined, rosy lilac. A friend has found some natural hybrids of these, apparently from a cross with I. macrosiphon. He describes them as so singularly beautiful that it is to be regretted that they are still in the wilderness.

Elizabeth, N. J. *J. N. Gerard.*

Euphorbias.

FEW of the many Euphorbias grown in our greenhouses are good ornamental plants. At this time the three species in bloom are E. pulcherrima, also known as Poinsettia pulcherrima, E. jacquinæflora and E. splendens. All these plants have inconspicuous flowers, but they produce very brilliant scarlet bracts, and are showy and ornamental at this season when flowers are scarce.

Euphorbia pulcherrima has large terminal scarlet bracts, which make it a striking object. We grow a large number of these plants. When they have finished blooming they are put under a bench to rest for two or three months and are kept perfectly dry. About the end of April they are cut back to within two buds of the old wood. They are then put into a warm house, where they are syringed for a few days to make the buds push. When fairly started, all the old soil is shaken from the roots and they are repotted in soil such as is used for ordinary stove plants. After repotting they are put back into the greenhouse for a few days until the weather is sufficiently warm for them to be plunged outside in the garden, when they require a liberal supply of water and are greatly benefited by syringing every evening. They are taken back to the greenhouse in September and the pots plunged in old sphagnum moss and kept close and shaded for a few days. I find that by plunging them in moss they keep their leaves better, and in a few weeks the moss is full of their roots. Then I begin to give them weak liquid-manure. Under this treatment the plants produce long stems, with plenty of large healthy leaves and large heads of flowers, some twelve, fifteen and eighteen inches in diameter. E. pulcherrima is easily propagated from cuttings of the young wood in spring or summer. If plants of various heights are required, cuttings should be put in at different times during the summer and grown along in pots.

Euphorbia jacquinæflora is not quite so showy as E. pulcherrima; when it is well grown it is, however, a handsome and useful winter-flowering plant. The color of the bracts is bright orange-scarlet, and the flowers and bracts are produced plentifully in long racemes, which make the plant very showy. It is very useful for cutting, and the bracts remain in perfection for some time after being cut. It is increased by cuttings in spring, and if the young plants are potted on and checked once or twice during the summer they make nice stocky plants for winter decoration. Old plants should be cut back and treated in the same way as E. pulcherrima. When set out in a border with plenty of room and light it makes a fine specimen plant, producing a large quantity of long racemes of bright bracts. Both of these Euphorbias are natives of Mexico.

Another Euphorbia which deserves a place in every collection of plants is E. splendens. This species is in bloom more or less during the entire year. Indeed, I do not remember the time when the plant we now have in bloom was without flowers. E. splendens has stout succulent stems, which branch freely, and these are thickly set with long, sharp thorns. The leaves are small, bright green and thin in texture. The bracts

are bright red and wax-like, and are produced on the points of the young growth. Under liberal treatment an abundance of flowers will be produced. Plants are obtained from cuttings of the young growth, which root with great ease. This Euphorbia has been in cultivation since 1826 and was introduced from Bourbon.

The other forms of Euphorbia cultivated here are not grown for their flowers or bracts, but rather as botanical curiosities. Some of them have succulent prickly cactus-like stems and are for the most part without leaves.

Harvard Botanic Garden. *Robert Cameron.*

Gloxinias.

IT is not too much to say that no summer-flowering bulbous plant makes such a grand display in the greenhouse as the Gloxinia. Begonias are not at their best during summer in the greenhouse, for very hot days sometimes cause their flowers to drop, and it is not until early fall that they are at their best. They should be treated accordingly, that is, kept back without artificial heat, not started before their own proper time, and kept cool during the summer. Begonias will come in as a good succession to Gloxinias, which are essentially summer-flowering plants and are most difficult to obtain in good condition later than August. Gloxinias are also admirably adapted for decorative purposes, either as pot-plants or as cut flowers. It is surprising how long the flowers will last when cut, but they cannot be sent any distance, as the least bruise disfigures them. When well grown as pot-plants the rich deep green foliage often completely hides the pots, and the richly colored flowers make a great display.

There are two distinct strains of Gloxinias, the thick-leaved, or G. crassifolia, which usually has flowers with solid colors; the strain that produces spotted flowers has thin and comparatively narrow foliage. These strains are so distinct that the difference is easily recognized in the seed-pans. It might be supposed that the two strains were of different specific origin, but I can find no reference to any other species than G. speciosa as the parent of the present race of Gloxinias, though the first seminal variations that occurred under cultivation were all distributed under Latin descriptive names. These might easily, now fifty years later, be taken for distinct species, which they were not; this emphasizes what has so often been urged in GARDEN AND FOREST, that mere garden forms of cultivated plants do not merit Latin names to distinguish them, though the practice too often prevails to our confusion. It should be stated that Gloxinia speciosa had drooping flowers of a purple color, and it is quite a common occurrence for seeds of good strains to revert to this original type and color, though the pendent flowered section is by no means as ornamental as are those with erect flowers. Any particular plant of a desired color can be perpetuated as easily by seed as by leaf-cuttings as usually practiced. It is only necessary to fertilize the newly opened flower with its own pollen to obtain a quantity of seeds which will come true to the parent, and the foliage will be as characteristic as the flowers. It is now, consequently, an easy matter to select desired colors when purchasing seeds.

The best time to sow Gloxinia seeds is in January, if a minimum of sixty degrees can be secured. The seeds, being very small, should be sown on a layer of sand and sprinkled with a fine sprayer, without any covering of earth. The pans should be covered with a piece of glass, leaving a space for air and moisture to escape. It will not often be necessary to water again before the seeds have germinated, which will be in about three weeks. As soon as the plants are large enough to handle they should be transplanted into other pans or boxes, and, later, potted in small pots. At this period the young plants grow very rapidly; seedlings may often be potted to advantage in six-inch pots during the first season and give fine results. Loam and plenty of decayed leaf, with enough sand to make it porous, is the best soil for Gloxinias. The plants may be potted on at any time before the flowers begin to develop; after that time no advantage is gained, but liberal treatment in the way of liquid-manure is beneficial until the flowers are fully open. A good brisk, moist heat is necessary to bring Gloxinias along to the flowering stage, when more air and less moisture will produce better flowers and they will last longer. The two important points essential to success with these plants are that they should not be exposed to direct sunlight, and, if they are, should never be watered or sprinkled over the foliage. The plants are liable to be attacked by thrips, and these minute insects speedily ruin them for the season. We fumigate regularly for thrips until the flowers open, but no longer. The work of these insects can easily be detected on the flower-buds and foliage, and remedial measures must be taken at once.

After the flowering period is over, the plants must be cared for and the foliage kept green as long as possible by careful watering and shading; if forced to rest prematurely the bulbs will be inclined to start into fresh growth. In winter we store the bulbs under the benches or in a warm cellar until they start to grow again; the earliest have just been repotted and will be potted on as they require it; they will begin to flower in May and will continue through the following months. In the hottest weather a heavy shading is necessary, or the flowers will fade in the heat of the day, recovering usually at night.

Of the various strains now offered, too much cannot be said for Emperor Frederick; it is brilliant crimson with a pure white margin, and is a vigorous grower. Defiance has a vivid coloring, but lacks vigor and is very difficult to grow. Cœlestina is a very large white flower flaked with blue, and is very robust. Of the strain sown as G. alba, every plant came pure white; it is evidently a selection from the spotted strain. A good white, with foliage like G. crassifolia, would be an acquisition in form, size and substance of flower. Corona is another of the spotted class. The purple and red coloring can always be obtained in plenty from a packet of any strain of seed which, with the erect-flowered G. crassifolia, would form the basis for a collection, which can be increased or diminished at pleasure, for we always find some varieties that are worth perpetuating and some that may easily be spared.

South Lancaster, Mass. *E. O. Orpet.*

Hardy Orchids for Outdoor Cultivation.

ABOUT forty species of the Orchid family are native to the north-eastern United States. For those who have acquired an interest in these wild plants, all varieties have an attraction, and even the least showy is interesting. For general outdoor cultivation a selection of a dozen species would include those which are easily cultivated and which have the qualities prized in garden-plants. Perhaps half of the remaining kinds could be grown with fairly good results.

The Cypripediums (Lady's-slippers) are the most showy of these native Orchids, the largest and finest of which is C. spectabile. It is an easy plant to grow if a little pains is taken in the start. It requires good drainage, partial shade and well-decayed peat about the roots. It never thrives with me when its roots come in contact with sand, gravel or loam. A good mulch of some sort is quite essential. I have seen plants too small for flowering set in heavy clay loam, and brought up to a good flowering size by using fine chip-dirt about their roots. Rich wood-soil or leaf-mold is also good, but I prefer well-decayed peat.

The two yellow Lady's-slippers, C. pubescens and C. parviflorum, are the easiest to manage and the most permanent when established. If the right location is selected and the soil properly prepared they will continue to thrive from year to year almost indefinitely. I know of a clump that was set in a shady place in a garden at least fifteen years ago. These plants have not received any care for the last ten years; they have flowered every season, and are as strong now as they were twelve years ago. The plants in a small bed of C. parviflorum, planted nine years ago in a shady position with plenty of peat mixed into the soil, were taken up and sold after a year or two. From fragments of their rhizomes, left in the bed, small plants came up and flowered. These plants have been twice taken out within the last six years, and there are now several flowering plants in the bed. The bed had no care after the first two years.

The stemless Lady's-slipper (C. acaule) does best in a light sandy soil; it also thrives in a mixture of peat or leaf-soil in a shady place. The ground around the plants should be covered with a mulch, not only to keep it light and moist, but to keep heavy rains from spattering the soil over the leaves, and thus injuring them. Pine-needles make the best mulch for this plant. I have found spring to be the best time for transplanting. C. acaule bears transplanting well, and will flower the first season. It will not, however, flower readily two years in succession after transplanting. I doubt if this is as permanent a species as some others. Even in its natural home it occasionally takes a year for rest, producing only its two radical leaves, or it gradually dwindles to a very small plant, and finally dies.

The little Ram's-head Lady's-slipper (C. arietinum) is a more difficult plant to grow than either of the yellow-flowered species. It needs more shade and a liberal supply of peat. Good drainage and a fine mulch of some sort is also essential.

Orchis spectabilis, so common in some of our New England woods, is somewhat difficult to establish, but is well worth extra trouble. Leaf-mold and sand is the best soil for it, and a mulch of old leaves, broken up fine, should be placed over it. It may be transplanted when in full bloom, or if strong plants are set out in autumn they will usually flower the next season. It needs shade, moist, but well-drained, soil, and a light covering in wintering.

Of the Rein Orchis (Habenaria), the two purple-fringed species of New England, H. fimbriata, which flowers in June, and H. psycodes, which comes in July and August, are somewhat alike in their general appearance. They grow in similar locations and the same treatment will answer for both. They like shade and a dark peaty soil, with plenty of moisture. It is necessary to give them a good mulch as well as a well-prepared soil if they are planted in ordinary garden ground. They grow in wet places, but will not bear any stagnant moisture.

The Yellow-fringed Orchis, H. ciliaris, with its orange-yellow flowers, likes a sandy soil best. It also needs plenty of moisture. It should be protected from sudden changes by a light mulch. It is perhaps the best Habenaria we have for cultivation.

The white-flowered H. dilatata of our cold northern bogs will thrive in peat or sand. Its pearly white flowers are quite fragrant and beautiful. A cool spot, shade and moisture are necessary for it in cultivation.

Adam and Eve, or Putty Root (Aplectrum hiemale), is one of the species of Orchids which sends up its dark green leaf late in autumn. These last until the flowering season of the next year, when they die down. The flowers are not very showy, but the large single green leaf in autumn and early spring is interesting, and it grows easily in ordinary gardens. It is a deceptive plant in cultivation, since its leaf disappears at the time other plants are in full growth, coming up again just before winter.

The Rattle-snake Plaintain (Goodyera pubescens) is valued more for its strongly white reticulated leaves than for its short spike of pretty white flowers. The leaves endure through the winter, and in spring are quite conspicuous when the snow first disappears. This species must have perfect drainage and a rich dark soil.

Only the strongest-flowering plants should be grown, and with these one or two flowering seasons are pretty sure to follow if anything like fairly good treatment is given, and they will repay the trouble and expense; weak plants may never bloom, and the results at best are not satisfactory. Most of these species may be transplanted either in spring or in autumn with fairly good results, or even at their flowering season. But spring is probably the best season when this is possible, when the plants can be set before they begin to grow.

Charlotte, Vt. *F. H. Horsford.*

The Forest.

Hygienic Significance of Forest Air and Forest Soil.

MUCH has been written and said about the influence of forests upon the health of mankind, and many differences of opinion as well as ignorant conjectures have combined to increase the confusion surrounding the subject. In our time, when so much attention is given to physical well-being, it seems the duty of science to make clear a more exact knowledge of the matter based upon accurate observations. Every one agrees that a residence in the country among the mountains, by the sea or near great forests is more conducive to health than a continual breathing of the impure, smoky air of the great cities, impregnated with dust and rich in bacteria. Health resorts have been preferably established in forest regions, and various explanations of the healthfulness of forest life have been given. The protection afforded by the trees against the sun, the high percentage of oxygen and ozone in the forest air due to the assimilation of carbonic acid by the foliage, and, finally, the influence which the trees in the process of transpiration exert upon the moisture of the atmosphere and the amount of water remaining upon the ground—all these single or combined conditions have been cited as the effective salubrious principle. Yet the exact scientific basis for all these theoretical explanations has been scanty, and it seems that, according to more careful investigation, some of them will have to be relegated to the realm of pleasing fancy. One of the first to fall is the oxygen theory. Although, no doubt, the respiratory action of all green plants, and forest trees in particular, changes a part of the carbonic acid of the air into oxygen, the carbon being consumed by the trees in making the wood, yet the amount of oxygen exhaled by a forest when assimilating carbonic acid is, according to the calculations of Dr. E. Ebermayer, a most excellent authority, proportionately to the needs of animal respiration, so insignificant as to make the special sanitary significance of small woods or street or park trees in large cities irrelevant from this point of view. The daily consumption of one person in respiration is 475 quarts of oxygen, equivalent to the oxygen exhalation of two square rods of forest area, but when we add the consumption of oxygen in burning fuel every two persons would require one and a quarter acres of forest to supply all the oxygen needed. Take, in addition, the consumption of animals—a herd of forty sheep consumes more oxygen and exhales more carbonic acid than one acre of forest exhales and consumes—and the irrelevancy of this supply of oxygen will be evident. This does not, however, entirely exclude the limited usefulness of forest growth in that direction. It is a fact that in and near forests greater amounts of ozone are found in general; but although this "condensed oxygen" has been often claimed as a special health-restorer, its significance as a hygienic factor is still doubtful.

Dr. Puchner, in his very extensive measurements of carbonic acid contents in the atmosphere under different conditions, found great irregularities in time as well as in local distribution. In a total of 162 cases, the amount of carbonic acid in the forest air exceeded that in the open in 108 cases, only forty-one cases showed less than the open, and in thirteen the proportions were equal. This surprisingly greater proportion of carbonic acid in forest air than in the open is easily explained by the decomposition of the forest litter which gives rise to this gas. It also varies according to seasons. In winter-time the difference is inconsiderable, while in summer it becomes proportionately greater. According to Dr. Ebermayer, the air in the forest soil contains less carbonic acid than that of the field, varying from three to four times less in winter to five to six times less in summer, the reason being that the vegetable matter in fields decomposes much faster than under forest cover.

While the chemical purity of forest soil and air, with reference to oxygen and carbonic acid distribution, remains doubtful, we nevertheless know that, like sea and mountain air, forest air is freer from injurious gases and dust particles; furthermore, the shade and the process of assimilation and transpiration have a cooling effect in the day, especially in summer-time, and a warming effect at night in winter, so reducing the extremes of temperature. The forest protection against winds is also undoubtedly of great value for promoting health conditions. Finally, the psychic influence is not to be forgotten, and we may consider the sanitary importance of the forest from these considerations alone as scientifically established. The main agency of the healthfulness of forest air is, however, the comparative absence of bacteria, and this is mainly due to the conditions of forest soil.

Since cholera, typhus, yellow fever and malaria are soil diseases of miasmatic origin, according to Dr. Pettenkofer, the forest soil becomes important in its relation to this phase of the subject. There are two classes of bacteria. Saprophytic bacteria are those which thrive upon decomposing animal or vegetable matter. Pathogenic bacteria, or disease germs, on the contrary, demand for their full cycle of development living organisms, although existing also outside of them. The vegetable matter in the forest soil is deficient in albuminoids, potash, phosphates and nitrates, and is therefore less nutritive for bacteria than field, garden or city soil. Temperature and moisture conditions in the forest soil are also different and less favorable to microbe life, which thrives best with certain temperatures and an alternation of dry and wet as is found in unshaded fields.

While, therefore, forest soil encourages saprophytic development, no pathogenic bacteria have as yet been found in it, proving it pure soil hygienically. Since bacteria get into the air only when the upper-soil strata dry out and the wind raises the dust with its bacterial germs, it is natural that with less liability to dryness in the upper soil and soil cover and absence of winds, the air in the forest must be freer from such germs. It would probably be entirely free, or nearly so, of pathogenic germs if they were not carried in from the outside. But in this respect, too, a filtering process takes place, at least, whether due to the reduction of velocity of the wind, or to the obstacles to movement in the trunks of trees, either of which would make the germ fall to the ground, and the forest air contains fewer microbes. This has been actually ascertained by two Italians, Serafini and Avatra, who

for forty consecutive days counted the microbic contents of the air in and outside and found from twenty-three to twenty-eight times more bacteria in the air on neighboring fields.

Referring to specific diseases in particular, Dr. Pettenkofer argues, from observations in India, the influence of forests on cholera and yellow-fever germs. He and other investigators find that villages surrounded by forests are free from both diseases, and that the withdrawal of troops into wooded districts stops the spread of the disease. On the other hand it has been observed that with the removal of the forest, cholera appears. Extensive moors seem to offer similar antibacterial soil conditions and immunity from these diseases. Says Dr. Ebermayer: "If it is considered that the comma bacillus which produces cholera makes great demands in its nutrition and belongs to the most sensitive bacteria, especially sensitive against free acids, being destroyed by the sour stomach juices; that when dried it dies quickly and is easily destroyed by decay-producing bacteria, prospering best in a temperature of 90 to 100° Fahrenheit, and ceasing to grow when the temperature sinks below 61° Fahrenheit, the protective influence of forests against this epidemic is easily explained."

According to Marchiafara and Celli, malaria is no bacterial disease, but is produced by parasitic protozoa, called by these authors "plasmodia," which are found in the red-blood corpuscles. Although their exterior existence is unknown, they probably come also from the soil. Warmth and wet soil, periodically dry in the upper strata, are the best conditions for their development. As long as the soil is covered by water, the air being thereby excluded, there is no danger. The danger arises during the change of the water stage, when the soil becomes exposed. Malaria plasmodia do not rise high above the soil, whence the desirability of houses elevated above the danger-line. With water and temperature conditions such as exist under forest cover, these plasmodia have less opportunity for development, and the absence of dust-formation and lack of movement of air prevents their distribution, while the water conditions in the forest soil are not as liable to the sudden changes necessary for their development.

In conclusion it may be said, in regard to the larger parks in cities, that, besides their most desirable æsthetic influence, their value is mainly in the better drainage conditions of the soil which they secure, and besides the coolness and circulation of fresh, pure air, which they induce, in their capacity of absorbing decaying animal matter, in the absence of dust and in the reduction of bacterial life. These effects, to be sure, are confined to their own limits and nearest neighborhood, but the possibility of breathing purer air, at least occasionally, must be an advantage to those who are forced to spend their lives in the impure conditions of a large city.

Washington, D. C. *B. E. Fernow.*

Correspondence.

The Season in Northern California.

To the Editor of GARDEN AND FOREST:

Sir,—Northern California has had a very open autumn and early winter. The rainfall early in October was sufficient to start the grass. The later storms were short, but with violent winds and great rainfall. During December or January we expect from ten days to three weeks of frosty weather; near the ocean and around San Francisco Bay the temperature does not fall more than a few degrees below freezing. Geraniums and Fuchsias become perennial, running wild over houses and even in neglected places. In the valleys north of the Bay and the Sacramento valley it is colder during these frosts, the thermometer falling as low as twelve degrees below freezing, although favored spots are almost frostless; the earliest fruit, vegetables and oranges from California are grown north of San Francisco. The frosty spell this season lasted two weeks, with clear, bright days and the ground in shady places remained frozen all day. Probably twenty-four degrees would mark the lowest point reached.

In our little town, as elsewhere, the Chrysanthemum is a great favorite, and a church flower-show brought out quite a creditable exhibit. All the plants are grown out-of-doors. We have little advantage over eastern cultivators, for, although we may get a fine bloom without shelter, the light frosts of late October endanger the earlier kinds, while with late varieties we can do nothing out-of-doors. From my collection of more than a hundred varieties I am discarding all late bloomers, and find that I can usually get a fine bloom from early and middle season Chrysanthemums with slight protection.

From the large number of good Chrysanthemums it is easy to select enough of the earlier sorts for a varied collection. This season I found Lord Alcester, Madame M. Fabri, Mikado, Louis Bœhmer and Melanet Robinet among the most satisfactory. I must say, with Mr. J. N. Gerard, that a well-grown plant, with dozens of naturally grown flowers, is a more pleasing object than the immense blooms of the artificially trained plants. Here, where we irrigate in summer, the problem is rather to keep plants down than to stimulate growth; a small plant in May, such as dealers send out by fall, will be a tree six or seven feet high, even when repeatedly pinched in; and even May slips, in open ground, will become unmanageably large.

Roses blossomed until late this season. Early in December, when the frosts set in, many sorts were blooming freely, and on Christmas-day I examined buds of Hermosa and found them uninjured, so that a few warm days will bring them out. There is nothing more satisfactory than Roses. I like to try those new to me, although new Roses will not compare with older ones. An old sort, Delphine Grandit, charmed us this fall. It is always a free bloomer, but it is not fully double in the summer; late in the fall, however, it gave great ivory-white roses, the best we had. Of some 150 sorts which I grow, La France is the best. The most satisfactory kinds during the past season have been La France, Duchesse de Brabant, Bon Silene and Catherine Mermet. There are many others which I esteem highly, but for reliability and real satisfaction at all seasons I must commend these four. Among satisfactory and free-blooming climbers are Reine Marie, Henrietta, William Allen Richardson and Gold of Ophir, which is exactly like Richardson, except in color, which is a copper-red.

On Thanksgiving-day I noticed Manzanitas in blossom on the mountains, and on Christmas-day they were blooming in town, and the flowers of California Laurel were almost open. The difference in climate in a short distance in California is remarkable. A German of my acquaintance purchased trees of Orange, Lemon, Lime and Loquat three years ago, which he planted a few miles from here on the mountains. They have been unprotected, have never been touched by frost, and Lemons were in blossom in last December. In a similar place I have seen Blackberries in flower, and green and ripe fruit at this season, yet here frost did not go out of shady places for a week. It is for this reason that native trees or shrubs blossom in some spots on the mountains a month or two earlier. In the fall and spring the frost often draws a sharp line through hill-side vineyards, freezing all below it.

A charming object in December is that always beautiful tree, the Madroña. It is a native here, and throughout the town it has been spared in yards. There are scores of healthy young trees, twenty to twenty-five feet high and erect, with glossy brown bark and large oval evergreen leaves. The berries, which are at first orange, and later turn to crimson, grow in large clusters. This year I have noticed some seven inches long and three inches through. One tree, about three feet through, forty feet high and spreading finely, was such a mass of crimson berries as almost to hide the leaves. This, with California Holly (Photinia arbutifolia), another fine evergreen with bright red berries, are the Christmas decorations. Mistletoe abounds, but is not even noticed.

Ukiah, Cal. *Carl Purdy.*

A Case of Inherited Variegation.

To the Editor of GARDEN AND FOREST:

Sir,—A stock of Cornus Mas, upon which a variegated form was grafted, was allowed to send up a branch, which eventually equaled in size the variegated portion. During 1890 seeds were borne by each part. The seeds were sown, and the following spring the young plants which came from the seed borne by the variegated portion showed the same coloring as the parent form; the other seedlings were normal. Another noticeable difference between the two lots was that the variegated seedlings were much weaker from the start, and eventually they all died, although they were grown under the same conditions as the others, and these are still alive.

Cornell University. *E. G. Lodeman.*

Notes.

The Pennsylvania State Horticultural Society begins its thirty-fourth annual meeting at Harrisburgh to-day, and continues for three days. Special attention will be given to reports on the peach-yellows and plant diseases in general.

Among the fancy fruits for sale now in the market of this city are Gros Colman grapes, imported from England, which

sell at $2.00 a pound. Choice selected Albemarle Pippins retail at from fifty cents to $1.00 a dozen, and find ready sale at $9.00 a barrel.

Forty-five students have registered for the short course in agriculture at Cornell University, to which we invited attention some time ago. There are about the same number of students who are taking the full course in the agricultural department of the university.

An interesting garden arrangement noted during the past summer by a traveler in England was a large rectangular bed, about twenty feet across, which was a solid mass of purple Clematis, presenting from a distance the effect of an immense bed of Violets. The plants had been set at intervals over the whole surface of the bed, and then trained to cover a flat trellis built over the bed at something less than a foot from the level of the soil. Naturally, the trellis was soon covered, and the blossoms as they appeared sought the light, so that the whole expanse was thickly strewn with them. This bed was in full bloom in late June, and was still in full bloom when revisited early in September.

In a recent issue of the San Francisco *Wood and Iron*, Humboldt County, the most western point in the United States, is stated to be the most densely wooded section in California, and to contain, according to the United States official estimates, 468,000 acres of Redwood-timber, 400,000 acres of Pine, Spruce, Fir and Cedar, and 200,000 acres of Madrone, Tan-bark Oak, Live Oak and Laurel. The yield of Redwood-lumber reaches as high as 300,000 feet to the acre, a low average price being $15 a thousand feet. About 5,000 men are employed in the logging woods and the mills of this county. Mendocino County is said to have an area of 700,000 acres of Redwood, yielding from 20,000 to 250,000 feet of lumber to the acre. The total cut of the mills in this county amounted, in 1891, to 99,438,190 feet.

When rabbits were first introduced into Australia no one seems to have considered how destructive they would become, or that the different governments of the island would be compelled to furnish hundreds of miles of wire-netting to keep them out of certain districts, besides expending large sums for destroying them. The Victorian government has erected a fence of wire-netting 150 miles long against them, and during the last ten years has expended £177,000 sterling for their extermination. The extent of the evil may be imagined from the fact that 15,000,000 rabbit-skins have been exported from New South Wales in one year. Twenty years ago there was not a rabbit in all New Zealand, and since then more than 106,000,000 rabbit-skins have been exported, while the property destroyed by rabbits is estimated by millions.

Two or three weeks ago we quoted from a letter of Mr. C. Wooley Dod, in the *Gardeners' Chronicle*, in which it was conjectured that a yellow-flowered plant in his garden was a hybrid between Chrysanthemum maximum and Anthemis tinctoria. The seedling came up among plants of C. maximum, and although it had leaves which he called abnormal, Mr. Dod had no doubt that it was from the seed of C. maximum, and since the flower was of a yellow color he inferred that it might be the result of a cross with the Anthemis, which stood near. It is, however, a dangerous thing to guess at the parentage of a plant, and Mr. Dod now writes to the *Gardeners' Chronicle* that his bigeneric hybrid has been pronounced Grindelia inuloides by the scientific committee of the Royal Horticultural Society. Mr. Dod wonders how the plant got there, as there never was a plant of that kind in his garden, so far as he knows. But, after all, it is a good deal easier for the seed of a Grindelia to find a comfortable germinating place in almost anybody's garden than it is for the pollen of a plant of one genus to find hospitable and fructifying admission into the ovary of a plant of another genus.

Henry Sargent Codman died suddenly, after an operation for appendicitis, on the 13th instant, at Chicago, where he had charge of the landscape department of the Columbian Exposition. No man at his age had ever accomplished more in his profession, or gave brighter promise of what could confidently be expected from his matured powers.

Mr. Codman was born in Brookline, Massachusetts, on the 19th of June, 1864. He graduated at the Institute of Technology in 1884, and almost immediately entered the office of Mr. Frederick Law Olmsted. In the summer of 1887 he traveled with his uncle, Professor C. S. Sargent, through England, France, Germany and Italy to study living collections of plants, nurseries, parks and gardens. Soon after, he went to Paris and pursued his professional studies for more than a year under the direction of Edouard André, and on his return he was taken into partnership by Mr. Olmsted. Since then he has been intimately associated with Mr. Olmsted in all the important works that have been carried on by that firm, including the design of the Exposition Grounds in Chicago, in the construction of which he has been practically the executive head from the outset. Mr. Codman was tall, strong, of commanding appearance and apparently of great constitutional vigor. He had inherited a profound love of natural beauty, and his taste had been disciplined and refined by close observation and wide reading. He was thoroughly acquainted with the literature of his profession. His library in this department was unequaled in this country, and his index of works on the subject, published in this journal, was the most complete that has yet appeared. He invariably gained the confidence and esteem of all with whom he came in contact professionally, and he was remarkably successful in impressing his opinions upon them and leading them to see things from his point of view. That he won the affection as well as the respect of his associates was remarkably manifested in his Chicago work, where he came into warm comradeship with almost the entire corps of artists, and where he helped, no doubt, materially, to bring about that sympathetic co-operation and unity of purpose which has been so marked among them. This was due partly to the fact that from his position he stood for the one uniting element and represented among the various professions and crafts the general design in its comprehensiveness and consistency. But his professional position was made effective by his personal qualities and accomplishments—by that broad, liberal and catholic cultivation which brought him into cordial and appreciative relationship with all the artists in all their varied fields. His leadership was, therefore, natural and spontaneous, for, although he was modest almost to diffidence, he never shrank from assuming responsibility. He had the moral qualities which mark the master, in addition to the highest intellectual appreciation of the possibilities of his profession, and in view of what he was and of the relations he had established with so many of the foremost architects of the country, his untimely death must be lamented as a serious loss to rural art in America.

Isaac C. Martindale died January 3d at his home in Camden, New Jersey. An active business man all his life, he found time to devote serious attention to the study of botany and to form a large and comprehensive herbarium, particularly rich in North American plants, while for many years he was an active and useful member of the Philadelphia Academy of Natural Science. The *American Naturalist* of November, 1879, contains his list of plants collected on the excursion of a number of members of the American Association for the Advancement of Science to the Rocky Mountains in 1878, with critical notes on various species. In a paper entitled "Notes on the Bartram Oak" (Quercus heterophylla), first read before the West New Jersey Surveyors' Association, in 1880, and afterward issued in pamphlet form, Mr. Martindale recorded the results of careful observations on this rare and interesting tree, which he believed was entitled to be considered a species and not a mere hybrid which other students of our Oaks had sometimes thought it. Here will be found the summary of the rather voluminous literature of Quercus heterophylla, a species which has long had special interest to dendrologists, both on account of its rarity and for the uncertainty of its origin. *The Proceedings of the Philadelphia Academy* for 1880 contain a short paper prepared by Mr. Martindale on "Sexual Variations in Castanea Americana." No. 2 of the *Memoirs of the Torrey Botanical Club* is "A List of the Marine Algæ hitherto observed on the Coasts of New Jersey and Staten Island," by Isaac C. Martindale. These are his principal publications, for Martindale was a collector rather than an author and probably never had the time to do more than arrange and keep up his large collections and library.

Catalogues Received.

W. F. Allen, Jr., Salisbury, Md.; Illustrated, Descriptive Catalogue of Choice Strawberry Plants.—F. Barteldes & Co., Lawrence, Kan.; Novelties in Vegetable and Flower Seeds; Seeds of Rocky Mountain Wild Flowers; Grass, Field and Tree Seeds; Nursery Stock.—Bowker Fertilizer Co., Boston and New York; Catalogue of Stockbridge Manures and Bowker's General Fertilizers.—Nanz & Neuner, Louisville, Ky.; Flower Seeds, Ornamental Climbers, New Roses; Shrubs and Trees.—Charles E. Pennock, Fort Collins, Colo.; Rocky Mountain Fruits and Shrubs.—O. D. Shields, Colorado Nursery Co., Loveland, Col.; Catalogue of Fruit and Ornamental Trees, Grape Vines and Roses; Wholesale Price List of Seeds and Plants of Rocky Mountain Evergreens.